

CLAIMS

1. A structural sandwich plate member comprising:  
5 first and second outer plates;  
a core of plastics or polymer material bonded to said outer plates with sufficient strength to transfer shear forces therebetween; and  
at least one interlayer within the core, said interlayer being generally parallel to the outer plates and having a higher tensile strength than the core material.  
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2. A structural sandwich plate member according to claim 1 wherein said interlayer comprises a metal, e.g. steel, stainless steel or aluminium, layer.
3. A structural sandwich plate member according to claim 2 wherein said interlayer has a  
15 thickness in the range of from 50% to 150% of the thickness of one of said outer plates
4. A structural sandwich plate member according to claim 1 wherein said interlayer comprises metal (e.g. steel, stainless steel or aluminium) mesh.
- 20 5. A structural sandwich plate member according to claim 4 wherein said metal mesh is formed of expanded metal.
6. A structural sandwich plate member according to claim 1 wherein said interlayer comprises a high tensile strength fabric.  
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7. A structural sandwich plate member according to claim 1 wherein said interlayer comprises a hard ceramic plate.
8. A structural sandwich plate member according to any one of the preceding claims  
30 wherein said interlayer is corrugated, or dimpled or wave-formed.

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9. A structural sandwich plate member according to any one of the preceding claims comprising a plurality of interlayers.
10. A structural sandwich plate member according to any one of the preceding claims  
5 wherein said interlayer is perforated.
11. A structural sandwich plate member according to any one of the preceding claims wherein said interlayer does not extend over the whole area of said plate member.
- 10 12. A structural sandwich plate member according to any one of the preceding claims wherein said outer plates are made of metal.
13. A structural sandwich plate member according to any one of the preceding claims wherein said outer plates have a thickness greater than or equal to 3mm  
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14. A structural sandwich plate member according to any one of the preceding claims wherein said core is made of a compact material.
15. A structural sandwich plate member according to any one of the preceding claims  
20 wherein said core has a thickness greater than or equal to 15mm.
16. A method of manufacturing a structural sandwich plate member comprising the steps of:
- providing first and second outer plates in a spaced-apart relationship with at least one  
25 interlayer located therebetween and spaced from each of said outer metal plates;
- injecting uncured plastics or polymer material to fill the space defined between said outer plates and either side of said interlayer; and
- allowing said plastics or polymer material to cure to bond said outer plates together with sufficient strength to transfer shear forces therebetween;
- 30 wherein said interlayer has a higher tensile strength than the cured plastics or polymer material.

17. A method according to claim 16 wherein said step of injecting is carried out from both sides of the plate, either simultaneously or in two stages.
18. A method according to claim 16 or 17 comprising the additional step of coating or  
5 impregnating the interlayer with plastics or polymer material prior to insertion into the cavity between the outer metal plates.